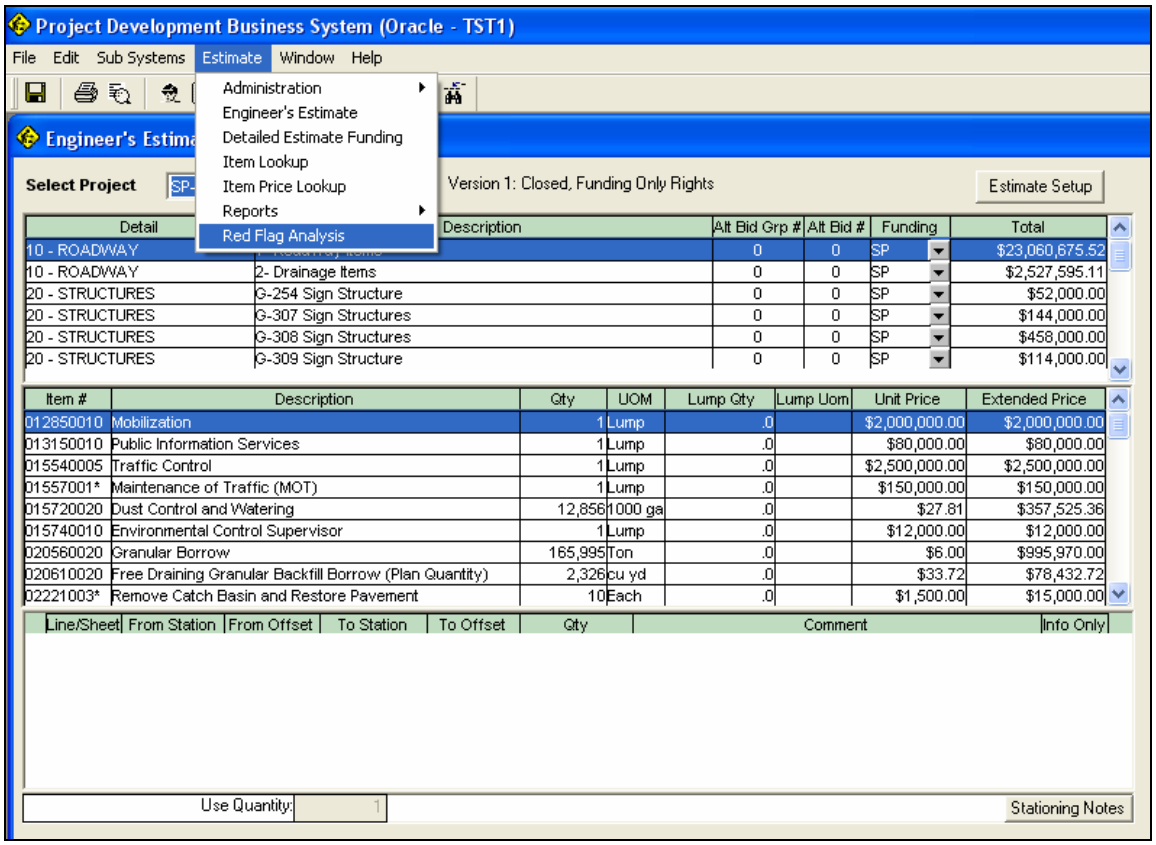
Red Flag Analysis Help Manual

Purpose of the Red Flag Analysis

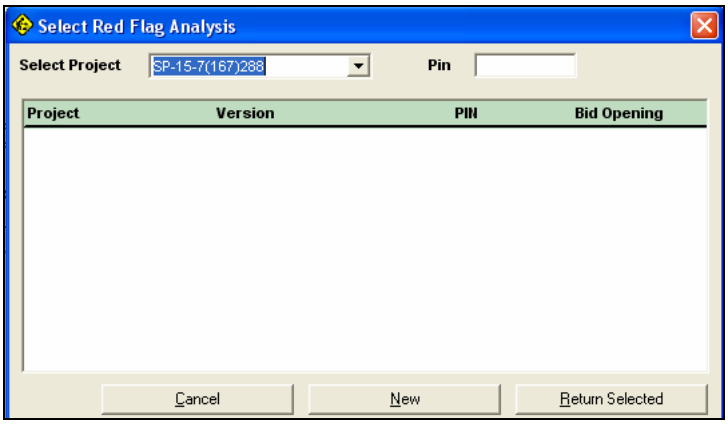
The purpose of the Red Flag Analysis is to aide the engineer in developing an Engineer's Estimate that accounts for the many factors that affect a project's cost. After applying realistic unit costs based on the best available information, the Red Flag Analysis will help tailor the estimate to specific characteristics of the project to assist in achieving an awardable estimate. The Red Flag Analysis suggests raising (red flag) or lowering (negative red flag) the Engineer's Estimate by a percentage to address the current bidding environment.

Starting a New Red Flag Analysis

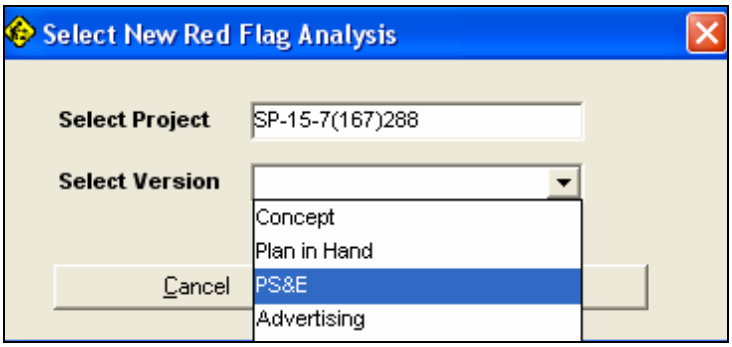
Open the Engineer's Estimate for the project from the Sub Systems menu. When the estimate is open, select the Red Flag Analysis option under the Estimate menu.



The following window will open if a Red Flag Analysis has not been started. Select the new tab to begin a Red Flag Analysis.



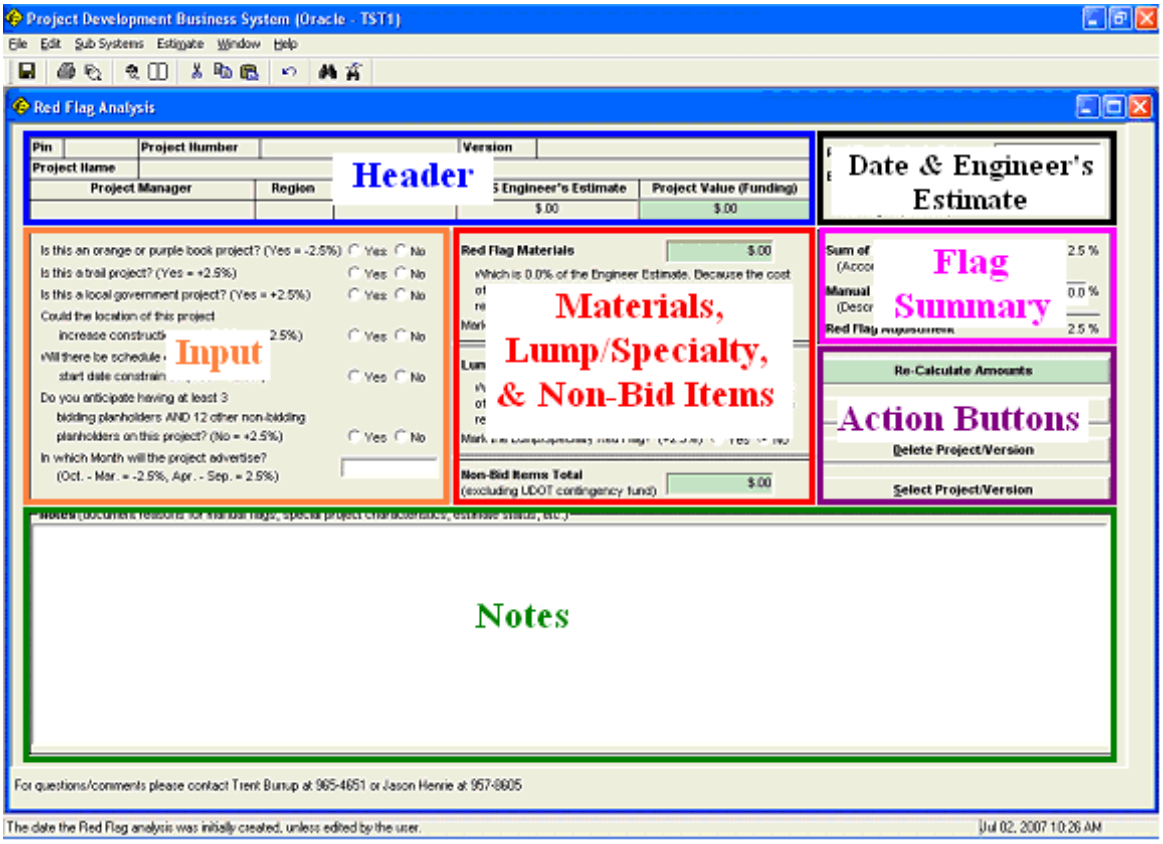
When the 'New' tab is selected, another window will appear where the version corresponding to the project's stage is selected. The user then completes the Red Flag Analysis for the selected version.



If the Engineer's Estimate is open and a Red Flag Analysis has been performed on the project, the program will automatically open the most recently modified version when Red Flag Analysis is selected under the Estimate menu. A different version of the project can be selected or created by clicking on the Select Project/Version action button.

The PIN or project number needs to be manually entered to retrieve the Red Flag Analysis for the project if the Engineer's Estimate is not opened prior to starting the Red Flag module. When entering the PIN, input zeros prior to the PIN such that six digits are used.

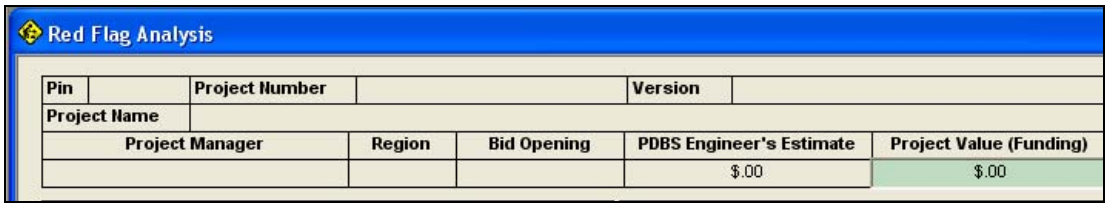
Red Flag Analysis Input Screen



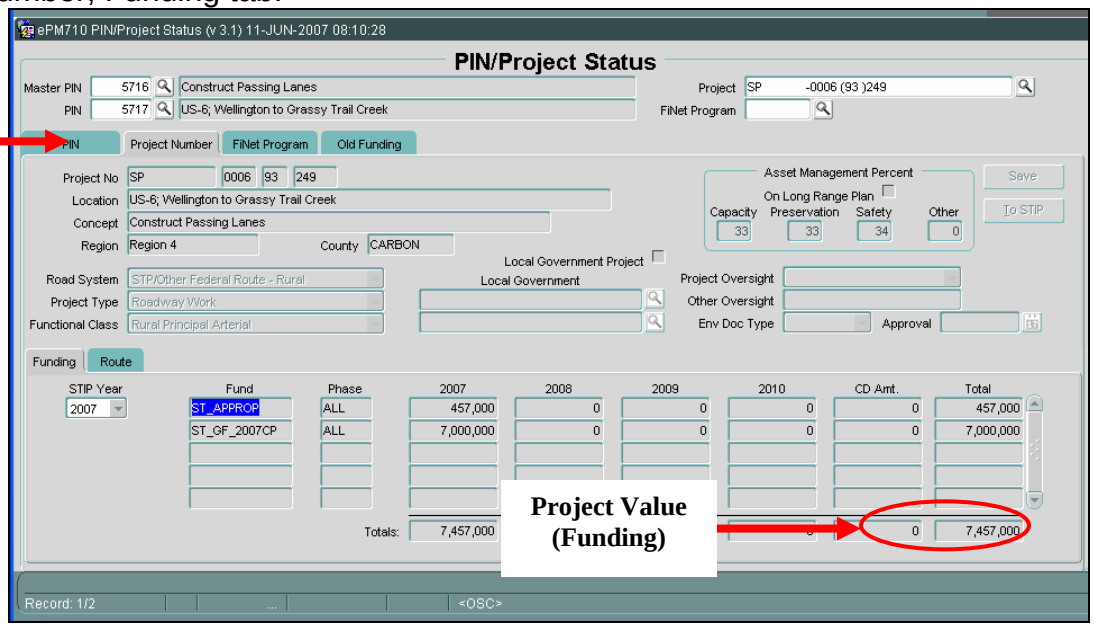
Header
Date & Engineer's Estimate
Input
Materials, Lump/Specialty, & Non-Bid Items
Flag Summary
Action Buttons
Notes

Header

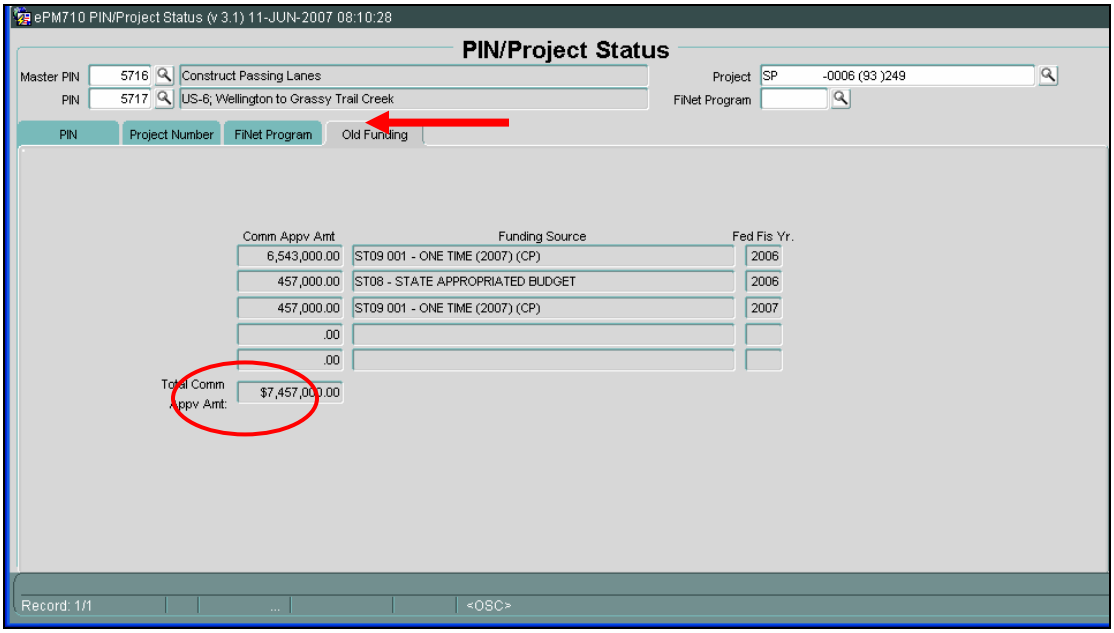
The header contains information about the project. This data is imported into the Red Flag Analysis when a new project or version is selected. The Project Value (Funding) is the only field that can be modified. This value is automatically generated, but the user can change this value if the current funding is not shown or correct.



- PIN (Project Identification Number) - The assigned PIN from ePM.
- Project Number - The project number from ePM.
- Version - The project/estimate stage (concept, plan in hand, PS&E, or advertising).
- Project Name - The name of the project as shown in ePM.
- Project Manager - The project manager as recorded in ePM.
- Region - Region where the project is located.
- Bid Opening - The anticipated date that the project will bid. The Red Flag Analysis program retrieves this date from PDBS after the project advertises.
- PDBS Engineer's Estimate - The current Engineer's Estimate of the bid items from PDBS.
- Project Value (Funding) - The current approved funding for the project as recorded in ePM. The program obtains this value from screen 710 of ePM in the Project Number, Funding tab.



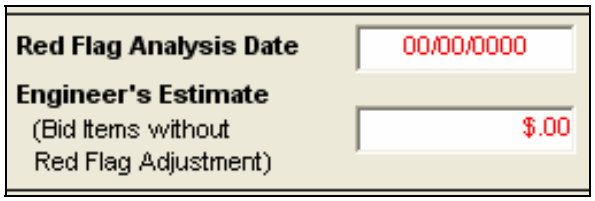
If no value is present under the Project Number, Funding tabs, the Red Flag Analysis program retrieves the Total Commission Approved Amount from screen 710 of ePM in the Old Funding tab.



If the value that the program retrieves is incorrect or not current, the user can manually input the Project Value.

Red Flag Analysis Date and Engineer's Estimate Box

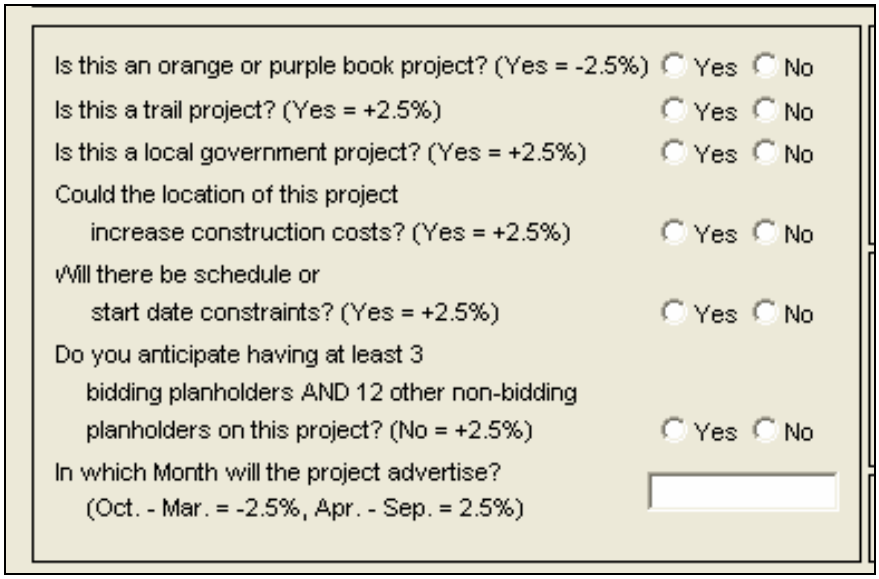
Enter the date of the analysis and the Engineer's Estimate of the bid items without the Red Flag adjustment.



- Red Flag Analysis Date - The date that this version of the project analysis is created.
- Engineer's Estimate (Bid Items Without Red Flag Adjustment) - This value represents the estimate WITHOUT taking into account the red flag adjustment.

Input Box

The user answers specific questions about project characteristics in the Input Box



- Orange/Purple Book Project - This is a pavement preservation type project. Typically, preservation projects are simple and straightforward, not overly complex, and are assessed a negative flag which reduces the estimate.

- Trail Project - A trail project is a bike or pedestrian trail. A red flag is added to these projects because bids are historically higher than estimated.

- Local Government Project - Historically costs are higher than estimated due to size and an increased number of project stakeholders. Marking a red flag increases the project estimate to account for this increased complexity.

- Location of Project - The location of a project can increase the cost of construction. Remote project locations increase hauling, materials, and other project costs. Selecting the 'Location of Project' flag helps account for these factors.

- Schedule/Start Date Constraints of Project - Strict schedules that don't allow contractor flexibility increase project costs. The scheduling flag accounts for additional project costs due to scheduling or start date constraints.

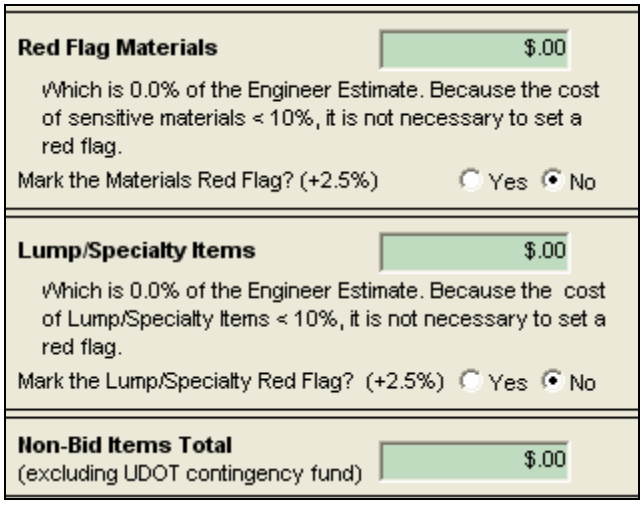
- Planholders (Contractor Interest) - Typically, more planholders provide more bidders, more competition, and lower bids. If contractor interest is minimal (measured by planholders) the Red Flag Analysis suggests a red flag.

- Bidding Season (Advertisement Month) - Historically, projects that advertise in the winter months (October through March) receive more awardable bids per project because contractors are looking for work for the upcoming season. Projects that advertise in the winter months receive a negative red flag.

  Projects that advertise during the busy summer months typically receive higher bids due to full contractor workloads. Projects advertising in the summer months of April through September are assessed a red flag.

Materials, Lump/Specialty, Non-Bid Items

The Red Flag Materials, Lump/Specialty Items, and Non-bid Items Total boxes are automatically computed by pressing the 'Re-Calculate' Button (the 'Re-Calculate' button is located in the Action Buttons).



- Cost Sensitive Materials - Construction materials are cost sensitive. Prices for these items vary based upon supply, demand, and other influences. Some examples of these materials include HMA, concrete, steel, etc. The Red Flag Analysis will automatically calculate the cost of these sensitive materials from the Engineer's Estimate in PDBS by clicking the 'Re-Calculate' button.

  If the cost of the volatile materials is greater than 10% on a large project (30% for a small project), the program suggests adding a red flag to account for market volatility of these materials.

  - Materials Considered as 'Red Flag Materials' - The Red Flag Analysis determines which bid items are considered cost sensitive materials by the following rules:

The sum of items beginning with the following numbers (ending with or without */D/P): 02741, 02742, 02743, 02748, 02771, 02776, 02785, 02786, 02844, 03211, 03310, and 05120;

Plus the sum of the following item numbers (unless the item number ends with */D/P): 02056, 02061, 02316, 02332, 02721, 02749, 02752, 02753, and 02773.

- Lump/Specialty Items - When significant amounts of project bid items are designated as 'lump' or 'specialty' items (items with a lump quantity or an item number ending in a */D/P, except for mobilization and traffic control), costs can increase due to contractor risk and other factors. The Red Flag Analysis suggests that if more than 10% of the engineer's estimate is lump/specialty items a red flag should be added to the project, increasing the expected construction cost of the project.

  The Red Flag Analysis will automatically calculate the total price of the lump/specialty items from the Engineer's Estimate in PDBS by clicking the 'Re-Calculate' button on the input screen.

  - Lump/Specialty Items Considered as 'Red Flag' - The Red Flag Analysis determines which bid items are considered as lump/specialty materials by the following rules:

    The sum of all bid items that are paid as a lump sum **except for** traffic control (item numbers beginning with 01554) or mobilization (item numbers beginning with 01285), plus the sum of any bid item ending with (*/D/P) **except for** the items that are counted as cost-sensitive materials.

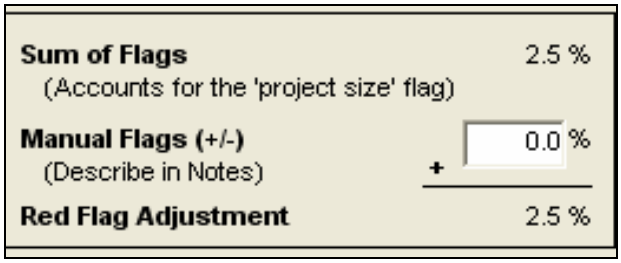
- Non-Bid Items Total - The Red Flag Analysis calculates the Non-Bid Items Total, excluding the UDOT contingency fund (Change Order Contingency Fund). The Non-Bid Items Total is used to determine the total project cost (bid items and non-bid items).

  The Red Flag Analysis calculates the UDOT Contingency Fund for the user to enter into PDBS. The UDOT Contingency Fund is not included in the PDBS non-bid items total to avoid adding it to the total project cost twice.

  The total price of the non-bid items is calculated from the Engineer's Estimate in PDBS by clicking the 'Re-Calculate' button.

Flag Summary

The Flag Summary box contains the Sum of Flags, the Manual Flags, and the total Red Flag Adjustment.



- Sum of Flags - This field is a running total of the flags evaluated by the Red Flag Analysis program. As the user makes changes to the Red Flag Analysis, the 'Sum of Flags' field will reflect those changes. The 'Project Size' is accounted for in the 'Sum of Flags' field. The Red Flag Analysis automatically marks this flag based on the Project Value (Funding).

- Manual Flags - The manual flags box allows the user to exercise engineering judgment to negate red flags acquired in the Red Flag Analysis. For example, if the project has schedule constraints the user selects 'Yes' on the schedule question in the input box. The manual flags box is where the schedule flag is negated if the engineer has already accounted for increased costs due to schedule in the Engineer's Estimate. The value to input in the manual flags field for this example is –2.5% (Note the (-) sign!). Doing so will negate the assessed red flag.

  The user can also add manual flags. For example: HMA prices are at a record high and the latest bids reflect price volatility. In addition to selecting 'Yes' on the materials flag to trigger the cost sensitive materials flag, the user can also add a manual flag if he/she doesn't feel the materials adjustment is sufficient. In this example if the user wants to double the recommended percentage for cost sensitive materials, the value to put in the manual flags field would be **2.5% (Note that no (+) sign is needed!)**.

  Manual flags do not require the user to apply 2.5% increments. Any value can be used to increase or decrease the total red flag percentage. The engineer in the above HMA example is able to use an appropriate value determined by engineering judgment instead of 2.5%.

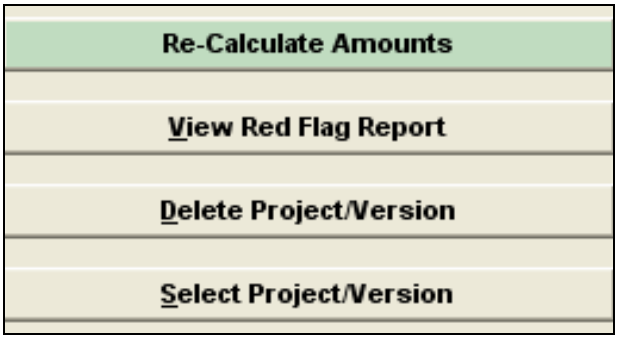
  It is important to fully document the reasons for all manual flags in the 'Notes' portion of the input screen. In the schedule example above, the engineer needs to make a note like the following: "05/25/2007 –Added a manual flag of –2.5% to negate the schedule flag. Schedule is accounted for estimate unit prices…Mr. Jones"

The changes suggested by the red flag program DO NOT have to be implemented. The engineer can use his/her judgment based on the specific needs of the project. The most important aspect of the Red Flag Analysis program is to document the reasoning behind the use/non-use of any red flags.

- Red Flag Adjustment - This field is the total of the 'Sum of Flags' field and the 'Manual Flags' field. It represents the total adjustment that the Red Flag Analysis suggests the user make to the engineer's estimate. The 'Sum of Flags' field and the Red Flag Adjustment field are running totals – as the user changes the characteristics specific to the project or the manual flags field, the Red Flag Adjustment field automatically updates.

Action Buttons

The **Action Buttons** will allow the user to Re-Calculate Amounts of the Project Value (Funding), Red Flag Materials, Lump/Specialty Items, and the Non-bid Items Total, View the Red Flag Report, Delete the project or version, or Select a different project or version of a project.



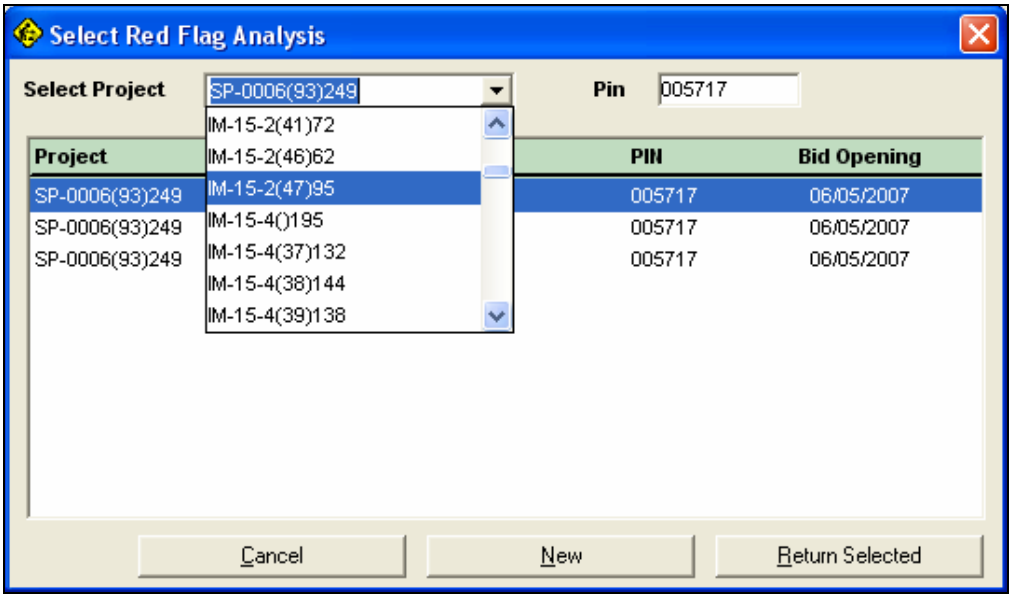
- Re-Calculate Amounts - The Re-Calculate Amounts action button automatically re-calculates the values in four different fields of the Red Flag Analysis: The Project Value (Funding), Red Flag Materials, Lump/Specialty Items, and Non-bid Items Total. The Project Value (Funding) dollar value is pulled directly from ePM. The other three (Red Flag Materials, Lump/Specialty Items, and Non-Bid Items Total) are calculated directly from the current Engineer's Estimate in PDBS.

- View Red Flag Report - The View Red Flag Report action button finalizes the Red Flag Analysis for the specific project version and allows the user to preview the report. The user is prompted to save any changes before displaying the Red Flag Report. Changes can be made to the Red Flag Analysis for the project and version by closing the report screen and entering changes into the Red Flag Analysis input screen.

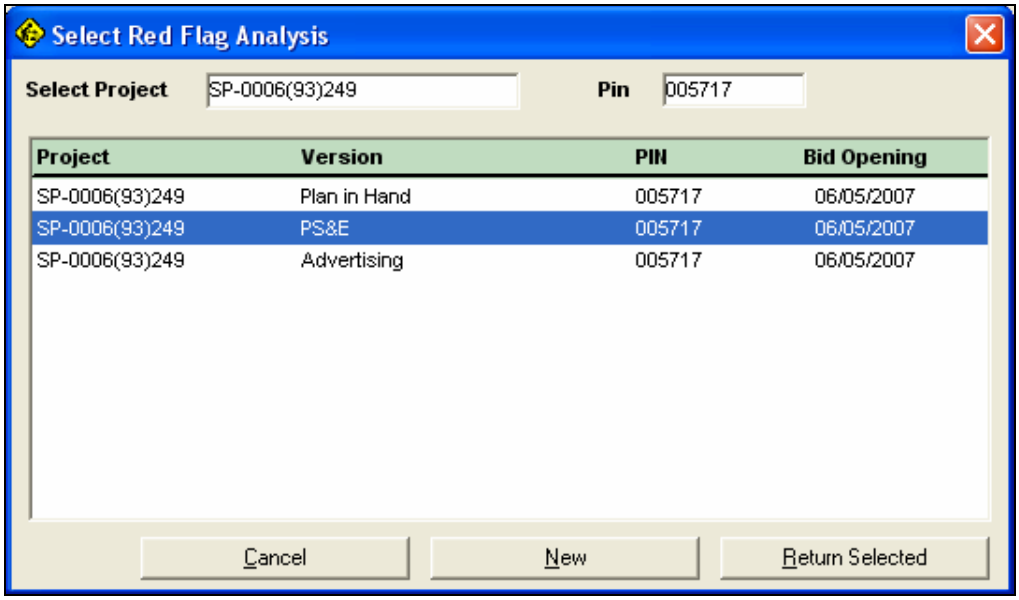
- Delete Project/Version - Selecting this action button will delete the Red Flag Analysis for the version of the project that is currently open.

- Select Project/Version - By clicking on the Select Project/Version option button, the user can do several things:

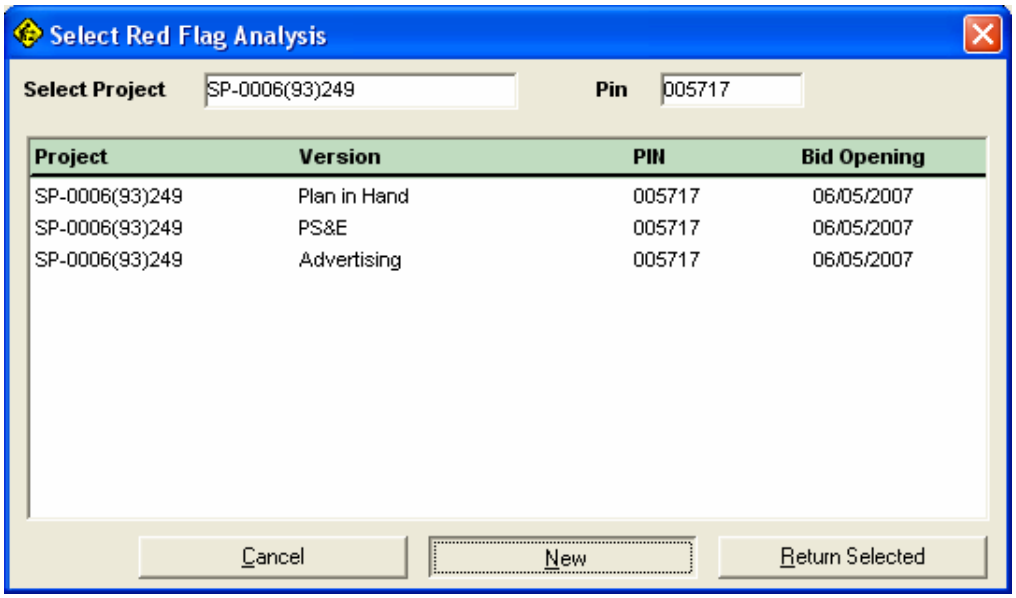
  - View Red Flag Analysis for a Different Project - View a Red Flag Analysis for a different project by using the drop-down menu or manually typing in the project number in the 'Select Project' window. The user can also select a new project by entering the PIN. Precede the PIN with zeros to create a six digit number.

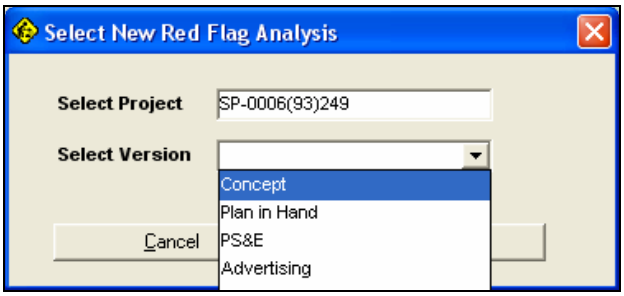


  - Select a Different Version of the Same Project - Select a different version of the same project by clicking on the desired version after choosing the 'Select Project/Version' in the Main Red Flag input screen.

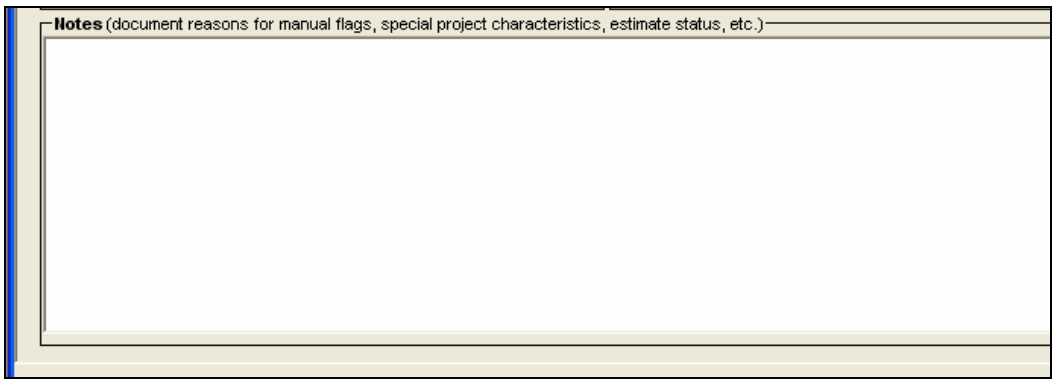


- Create a New Version of the Same Project - Select the ‘New’ button in the ‘Select Red Flag Analysis’ window. This opens a new window where the user selects a project and version from drop down menus.





Notes

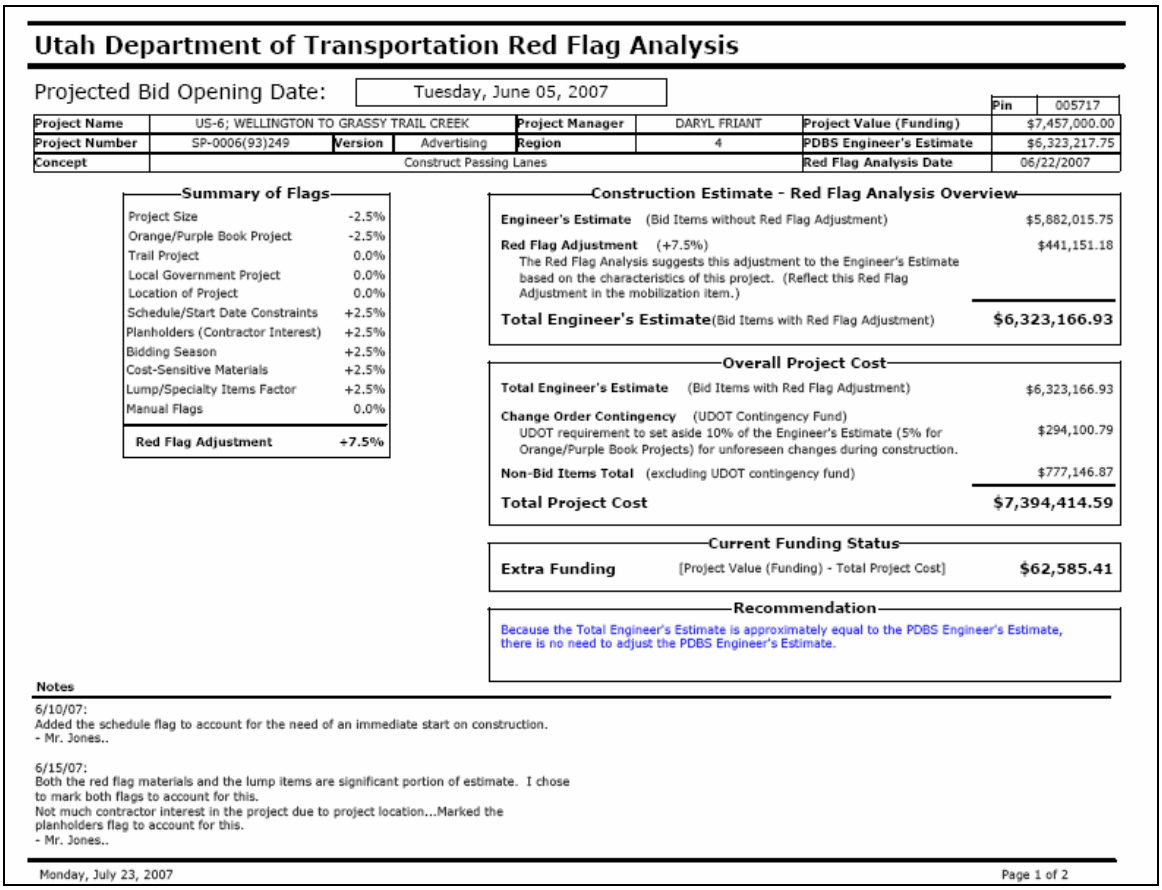


The user documents their reasoning for adjusting any manual flags, comments on project characteristics or considerations, mentions the status of the estimate, etc in this

field. All entries should contain the date the comment was made and the name of the person making the comment.

An example in the Notes section might read: "06/05/2007 – Added a manual flag of –2.5% to cancel the materials flag…I have already accounted for the rising costs of HMA and concrete in the estimate…Mr. Jones".

Red Flag Analysis Report Screen



Utah Department of Transportation Red Flag Analysis

Projected Bid Opening Date: Tuesday, June 05, 2007

						Pin	005717
Project Name	US-6; WELLINGTON TO GRASSY TRAIL CREEK			Project Manager	DARYL FRIANT	Project Value (Funding)	$7,457,000.00
Project Number	SP-0006(93)249	Version	Advertising	Region	4	PDBS Engineer's Estimate	$6,323,217.75
Concept	Construct Passing Lanes					Red Flag Analysis Date	06/22/2007

Summary of Flags

Project Size	-2.5%
Orange/Purple Book Project	-2.5%
Trail Project	0.0%
Local Government Project	0.0%
Location of Project	0.0%
Schedule/Start Date Constraints	+2.5%
Planholders (Contractor Interest)	+2.5%
Bidding Season	+2.5%
Cost-Sensitive Materials	+2.5%
Lump/Specialty Items Factor	+2.5%
Manual Flags	0.0%
Red Flag Adjustment	**+7.5%**

Construction Estimate - Red Flag Analysis Overview

Engineer's Estimate (Bid Items without Red Flag Adjustment)	$5,882,015.75
Red Flag Adjustment (+7.5%) The Red Flag Analysis suggests this adjustment to the Engineer's Estimate based on the characteristics of this project. (Reflect this Red Flag Adjustment in the mobilization item.)	$441,151.18
Total Engineer's Estimate (Bid Items with Red Flag Adjustment)	**$6,323,166.93**

Overall Project Cost

Total Engineer's Estimate (Bid Items with Red Flag Adjustment)	$6,323,166.93
Change Order Contingency (UDOT Contingency Fund) UDOT requirement to set aside 10% of the Engineer's Estimate (5% for Orange/Purple Book Projects) for unforeseen changes during construction.	$294,100.79
Non-Bid Items Total (excluding UDOT contingency fund)	$777,146.87
Total Project Cost	**$7,394,414.59**

Current Funding Status

Extra Funding	[Project Value (Funding) - Total Project Cost]	**$62,585.41**

Recommendation

Because the Total Engineer's Estimate is approximately equal to the PDBS Engineer's Estimate, there is no need to adjust the PDBS Engineer's Estimate.

Notes

6/10/07:
Added the schedule flag to account for the need of an immediate start on construction.
- Mr. Jones..

6/15/07:
Both the red flag materials and the lump items are significant portion of estimate. I chose to mark both flags to account for this.
Not much contractor interest in the project due to project location...Marked the planholders flag to account for this.
- Mr. Jones..

Monday, July 23, 2007 Page 1 of 2

Header

For definitions or explanations of terms that appear in both the report header and the input screen header, see page 4 under the 'Header' section of the Input Screen. Other terms listed in the report that aren't in the input screen are shown below.

- Projected Bid Opening Date - The anticipated date that the project will bid. The Red Flag Analysis program retrieves this date from PDBS after the project advertises.

- Concept - This is a physical description of the work that will be done on the project. For example: “Construct Passing Lanes” or “Road Widening and Adding Lanes”.

- Red Flag Analysis Date - The date that this version of the project analysis is created.

Summary of Flags

To view the definitions and explanations of terms in the ‘Summary of Flags’ box that also appear in the input screen, refer to the Input, Materials, Lump/Specialty, and Flag Summary boxes in the Input Screen section of this document.

- Project Size - This flag is not shown in the input window. The Red Flag Analysis program automatically determines and marks a project size flag. Small projects have a Project Value (Funding) less than $500,000 and are assessed a +2.5% flag. Large projects have a Project Value (Funding) of greater than $5,000,000 and are assessed a –2.5% flag. Finally, any project that has a Project Value (Funding) of between $2,000,000 and $5,000,000 is assessed a –1.5% flag.

Construction Estimate – Red Flag Analysis Overview

- Engineer’s Estimate (Bid Items without Red Flag Analysis) - This value represents the estimate WITHOUT taking into account the red flag adjustment.

- Red Flag Adjustment - This is the dollar amount adjustment that the Red Flag Analysis suggests should be made to the Engineer’s Estimate (Bid Items without Red Flag Adjustment). Make this adjustment to the mobilization item.

- Total Engineer’s Estimate (Bid Items with Red Flag Adjustment) - This is the Engineer’s Estimate (Bid Items without Red Flag Adjustment) plus the Red Flag Adjustment. This is the bid item (construction estimate) dollar value suggested by the Red Flag Analysis.

Overall Project Cost

- Total Engineer’s Estimate (Bid Items with Red Flag Adjustment) - This is the Engineer’s Estimate (Bid Items without Red Flag Adjustment) plus the Red Flag Adjustment. This is the bid item (construction estimate) dollar value suggested by the Red Flag Analysis.

- Change Order Contingency (UDOT Contingency Fund) - It is a UDOT requirement to set aside ~10% of the Engineer’s Estimate (5% for Orange/Purple projects) for unforeseen changes during construction.

- Non-Bid Items Total (excluding UDOT Contingency Fund) - The Red Flag Analysis calculates the Non-Bid Items Total, excluding the UDOT contingency fund (Change Order Contingency Fund). The Non-Bid Items Total is used in determining the total project cost (bid items and non-bid items).

  The Red Flag Analysis calculates the UDOT Contingency Fund for the user to enter into PDBS. The UDOT Contingency Fund is removed from the PDBS non-bid items total to avoid adding it to the total project cost twice.

  The total price of the non-bid items is calculated from the Engineer's Estimate in PDBS by clicking the 'Re-Calculate' button.

- Total Project Cost - The Total Project Cost is the sum of the Total Engineer's Estimate, Change Order Contingency, and the Non-Bid Items Total. This is the total anticipated cost of the project (Bid items and Non-Bid items) that incorporates the Red Flag Analysis suggestions.

Current Funding Status

- Under Funded Amount [Project Value (Funding) – Total Project Cost] - The project is under funded because the Total Project Cost is greater than the available project funding [Project Value (Funding)].

- Extra Funding - More money is available (funded) than the anticipated cost of the project [the Project Value (Funding) is greater than the Total Project Cost].

Recommendation

The Red Flag Analysis will recommend a course of action based on the results of the analysis, including raising the estimate, lowering the estimate, or leaving the estimate as is.

Notes

See the 'Notes' section under Red Flag Input Screen.

Bid Results

The Red Flag Analysis displays the bids on the report after bid opening. For each bid the project receives the report shows the bidder, the dollar amount of the bid, and the percentage of the engineer's estimate that the bid was.